Part 1

1. Write a python program to prompt the user for their name, admin number, age, gender, and weight. Display that information on the screen.

```
q1
enter your name: John
enter your admin number: 123456S
enter your age: 18
enter your gender: Male
enter your weight (kg): 70
hello John! your admin number is 123456S,
you are 18 years old, Male and weigh 70.00kg.
```

2. Write a python program to prompt the user to enter two numbers, one to check and one to divide by. If the second number divides evenly into the first number, print a message to let the user know.

```
q2
enter a number a check: 10
enter a number to divide by: 2
10.0 divides evenly by 2.0
```

3. Identify the output of the following statements. For statements that are incorrect, identify their errors and modify them to give the correct output.
   a) a = "1" + 2 * "3" + "1"
   a) b = 1 + "2" * 3 + "1"
   b) c = 1 + 2 * 3 / 3 + 1
   c) d = "1" + "2" * "3" + "1"
   d) e = 1 + False/True
   e) f = 1 + True/False

4. Find and fix all the syntax errors in the code below. Explain why they are errors.

```
subtract(a, b):
  if a > b
  print(a - b)
  esle:
     print(b - c)
subtract(10,5)
subtract(3,5)
```

5. Find and fix the potential sources of runtime errors in the code below.

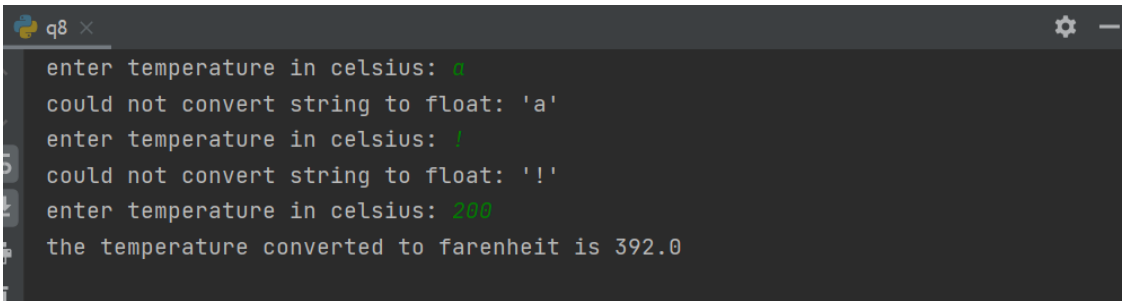
```
dividend = float(input("enter the dividend: "))
divisor = float(input("enter the divisor: "))
quotient = dividend / divisor
quotient_rounded = math.ceil(quotient)
```

6. Find and fix the potential sources of logical errors in the code below.

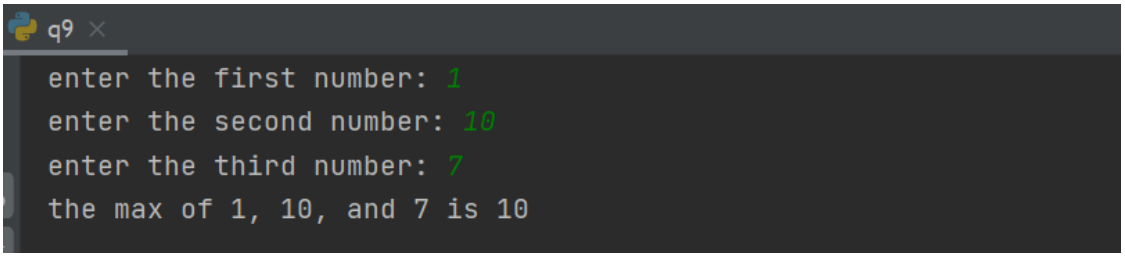
```
x = float(input("enter a number: "))
y = float(input("enter a number: "))
z = x + y / 2
print(f"The average of the two numbers you have entered is: {z}")

nums = 1
for num in range(10):
  num += num
print(nums)
```

7. Draw a flowchart of a python program that will convert temperature in Celsius to Fahrenheit. Write the program to implement this flowchart.
    a) Modify the program such that it is able to handle invalid values



8. Write a python program that asks the user for three variables and returns the largest of the three. Do this without using the in-built max() function.



End of Part 1

Part 2

1. Write a python program to check if a triangle is equilateral, isosceles, or scalene.
   - An equilateral triangle has three equal sides
   - A scalene triangle has three unequal sides
   - An isosceles triangle has at least two equal sides

```
q1
input length of the first side of the triangle: 20
input length of the second side of the triangle: 5
input length of the third side of the triangle: 2
it is a scalene triangle
```

2. Write a python program that re-arranges a given string such that the lowercase letters should come before the uppercase letters.
   - The given string is string = "tHE QuiCk BrOWn foX jumPED oveR THe feNCE"

```
q3
the original string is: tHE QuiCk BrOWn foX jumPED oveR THe feNCE
the reformatted string is: tuikrnfojumoveefeHEQCBOWXPEDRTHNCE
```

3. Write a python program to calculate the sum of all the even numbers in a given list.
   - The given list is myList = [1, 2, 3, 4, 5, 6, 7, 100, 110, 21, 22, 33, 32, 2, 4]

```
q4
the sum of even numbers is 282
```

4. Write a python program to find the prime factors of a number.
   - If a factor of a number is a prime number then it is its prime factor

```
q4
enter a number: 70
the prime factors of 70 are:
2
5
7
```

5. Write a python program that asks the user to enter how many numbers they wish to capture.
   a) The program should store the numbers in a list and display the lowest number, the highest number, the total of the numbers, and the average of the numbers

b) Modify the program so that it will continue to ask the user for input until a valid input is given

```
q7
enter how many numbers you want to capture: 5
Enter number #1: 6
Enter number #2: 7
Enter number #3: 3
Enter number #4: 5
Enter number #5: 2
[6, 7, 3, 5, 2]
lowest number in the list: 2
highest number in the list: 7
total of numbers in the list: 23
average of numbers in the list: 4.60
```

6. Write a python program to ask the user for the number of elements they would like to be placed inside a tuple and ask the user to input the values.
   a) Join the tuple with another given tuple. The given tuple is givenTuple = (5, 9, 10, 9, 2)
   b) Count the number of occurrences of a specified element
   c) Reverse the tuple

```
q8
enter number of elements: 3
enter #1: 9
enter #2: 5
enter #3: 3
your tuple is: (9, 5, 3)
the joined tuple is: (9, 5, 3, 5, 9, 10, 9, 2, 9)
=====================================================
enter a number to count: 9
the number of times the number 9 appeared is 4
=====================================================
the reversed tuple is: (9, 2, 9, 10, 9, 5, 3, 5, 9)
```

7. Write a python program that asks the user for a number and then prints out a list of all the divisors of that number.
    - A divisor is a number that divides evenly into another number

```
q9
enter a number to divide: 100
divisors of 100: [1, 2, 4, 5, 10, 20, 25, 50, 100]
```

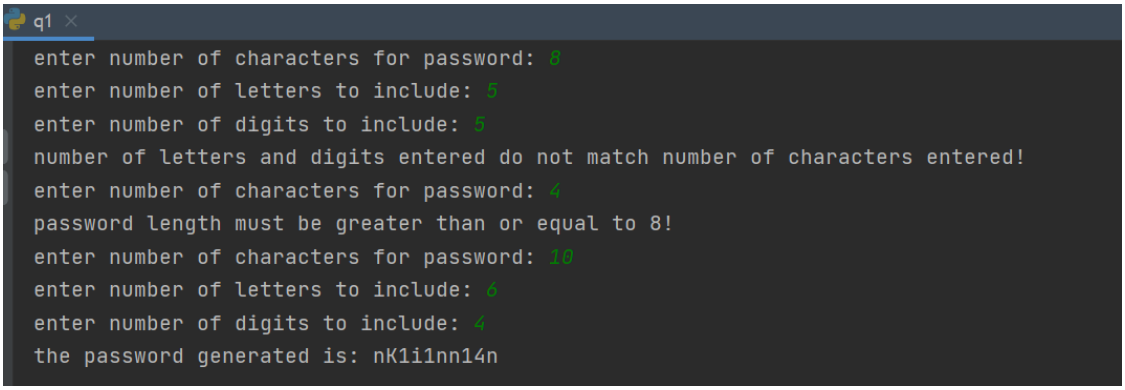
8. Write a python program of a number guessing game that allows the user to guess a randomly generated number between 1 and 9 (inclusive).
    a) The user has 3 guesses. Let the user know if their guess is too high, too low, or correct.
    b) Modify the program to display an error message if the user enters an invalid value

```
Enter a number: 70
too high
Enter a number: 5
too low
Enter a number: 11
bingo
game over!
```

End of Part 2

Challenge Yourself!

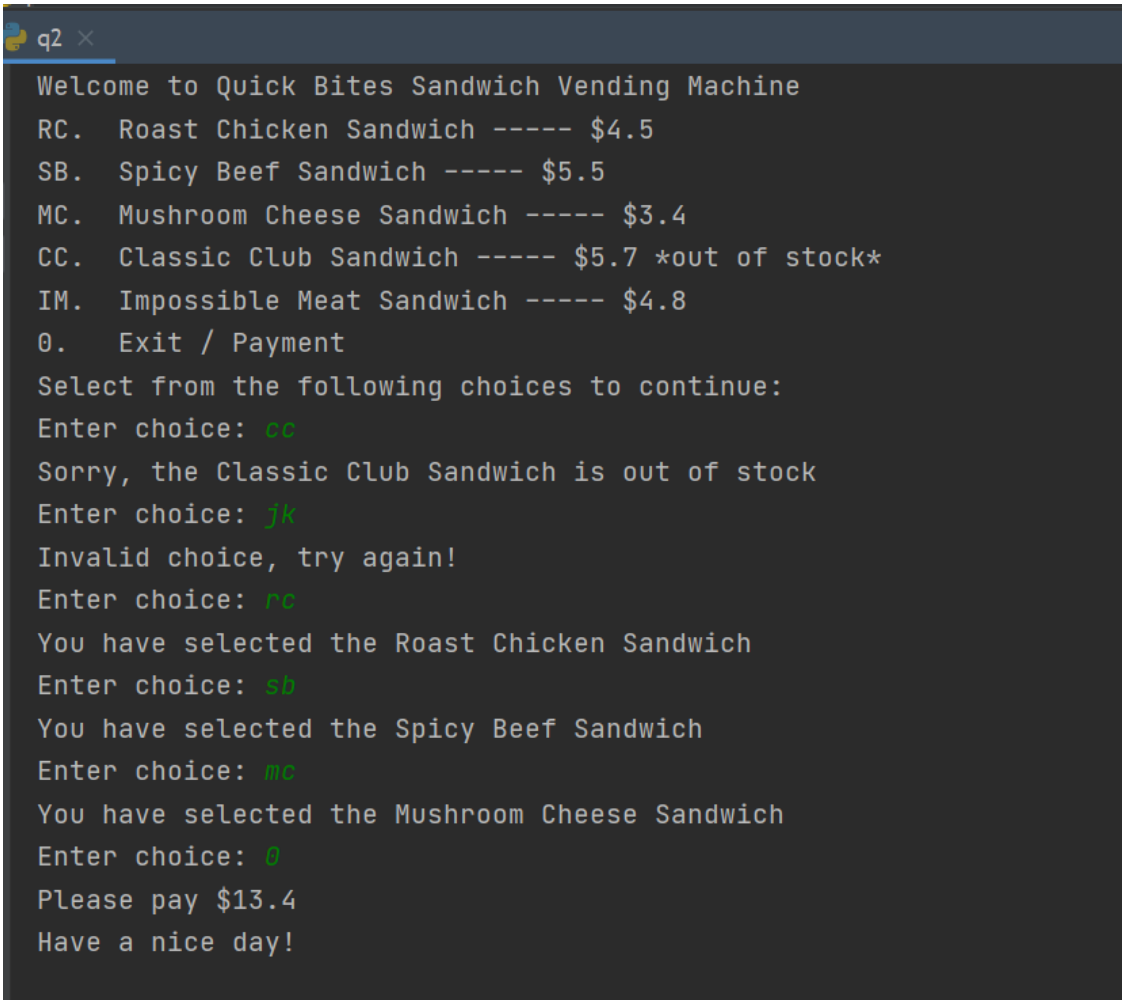
1. Write a python program to generate random passwords.
    a) Ask the user to enter how many characters they want in their password (minimum password character length should be 8)
    b) Ask the user to enter how many letters and digits they want in their password
    c) The program must be able to handle any errors



2. Write a python program to simulate a sandwich vending machine program.
    a) Create a nested dictionary using the values below to store the inventory of the sandwich vending machine

```
menu = {'RC': {'description': 'Roast Chicken Sandwich', 'price': 4.50, 'Qty': 5},
    'SB': {'description': 'Spicy Beef Sandwich', 'price': 5.50, 'Qty': 15},
    'MC': {'description': 'Mushroom Cheese Sandwich', 'price': 3.40, 'Qty': 5},
    'CC': {'description': 'Classic Club Sandwich', 'price': 5.70, 'Qty': 0},
    'IM': {'description': 'Impossible Meat Sandwich', 'price': 4.80, 'Qty': 10}}
```

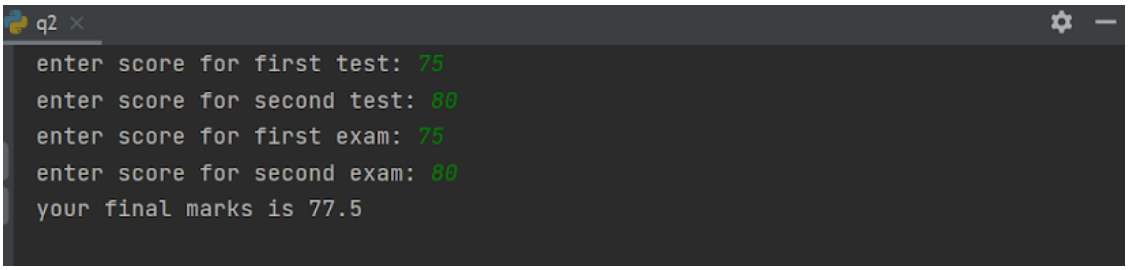
    b) Display the sandwich vending machine's menu and prompt the user to make a choice
    c) The user must enter a valid choice in order to make a purchase. Tell the user what was selected after each choice. Multiple choices are allowed. When the user enters 0, display the amount to be paid.
    d) The program must be able to handle any errors



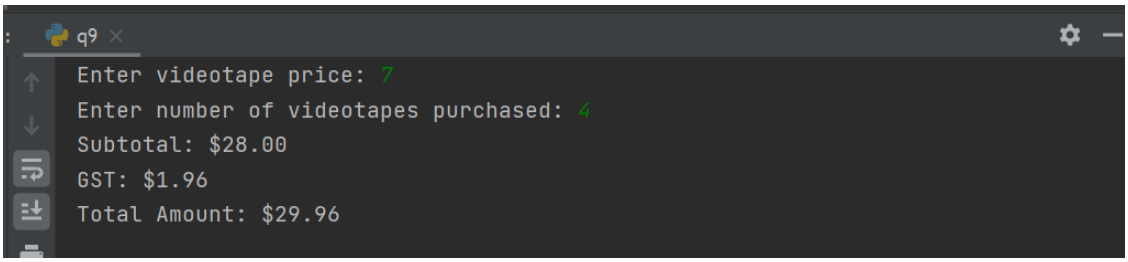
End of Challenge Questions

Extra Practice

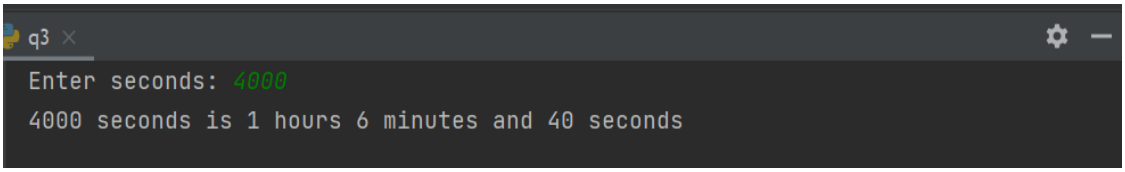
1. In an academic year, there are two tests and two exams that contribute to a student's final marks for a particular module. The tests make up 50% of the final mark and the exams make up the other 50%. Write a python program to calculate the final marks of a student, based on the inputs as shown below.



2. Draw a flowchart of a python program that will help a video store calculate and display the sales amount. Ask the user for the unit price and the number of videotapes. Assume GST is 7 percent. Write a program to implement this flowchart.



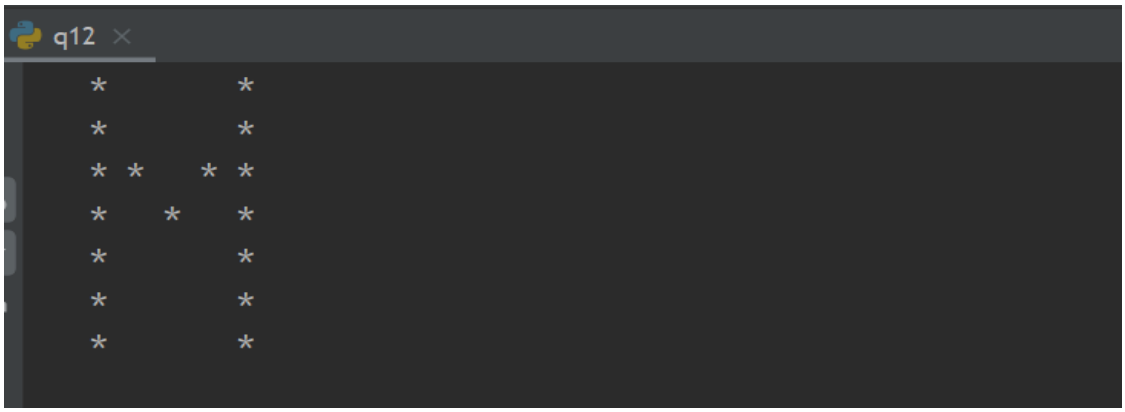
3. Write a python program to convert total time duration in seconds to hours, minutes, and seconds.



4. Write a python program to find the median of three values.

5. Write a python program to check if the key "laptop" is present in a given dictionary of household items.
   - The given dictionary is items = {"TV": 30, "laptop": 20,"refrigerator": 50, "table": 20, "air conditioner": 100}

6. Write a python program to print the alphabet “M”.



End of Extra Practice Questions